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BOTANY.<sup>1</sup>

THE GENUS *TAPHRINA* OF TULANE.—This genus (*Exoascus* of Fuckel) of curiously simplified Ascomycetes, is an interesting one for the comparative anatomist, affording as it does such a remarkable instance of structural degradation through parasitism. By Winter (Krypt-Flora v. Deutschland, Oesterreich u. d. Schweiz. 1<sup>r</sup> Band, 2<sup>e</sup> Abth., pp. 2–11) the genus was made the principal one of the first order (Gymnoasceæ) of the class Ascomycetes. He divided the Gymnoasceæ into two families, viz.: (1) *Exoasci* and (2) *Gymnoasci*, the first including the genus under consideration (under Fuckel's name, *Exoascus*), and the second, the related genera, *Endomyces*, *Eremascus*, *Gymnoascus* and *Ctenomyces*.

The extreme simplicity of these plants, composed as they are of little more than single parasitic asci, marks to a great extent their relationship to the larger Ascomycetes. Parasitism has here brought about an almost complete atrophy of the plant body, as in the vine rapes (*Rafflesiaceæ*), among the parasitic Phanerogams the plant body is almost entirely suppressed, leaving only the large flower bud which grows directly from its host.

The genus has been recently made the object of study by a Swedish student, C. J. Johanson of Upsala,<sup>2</sup> who has distinguished twenty-one Scandinavian species, as follows:—

*Taphrina pruni* Tul. (*Exoascus pruni* Fkl.).

*T. bullata* Tul. (*Exoascus bullatus* Fkl.; *Ascomyces bullatus* Berk.).

*T. insititiæ* Johans. (*Exoascus insititiæ* Sadebeck).

*T. deformans* Tul. (*Exoascus deformans* Fkl.; *Ascomyces deformans* Berk.).

*T. nana* Johans.

*T. potentillæ* Johans. (*Exoascus deformans* Fkl.; var. *potentillæ* Farl.).

*T. alnitorqua* Tul. (*Ascomyces tosquinetii* Westd.).

*T. betulina* Rostrup (*Exoascus turgidus* Sadebeck).

*T. alpina* Johans.

*T. borealis* Johans.

*T. aurea* Fries (*Exoascus aureus* Sadebeck; *E. populi* Thüm.).

*T. sadebeckii* Johans. (*Exoascus flavus* Sadebeck).

*T. betulæ* Johans. (*Exoascus betulæ* Fkl.; *Ascomyces betulæ* Magnus).

*T. rhizophora* Johans.

<sup>1</sup> Edited by Prof. Chas. E. Bessey, Lincoln, Neb.

<sup>2</sup> Kong. Vetenskaps-Akademie. Band 13. Afd. III. No. 4.

*T. cœrulescens* Tul. (*Exoascus cœrulescens* Sadebeck; *Ascomyces cœrulescens* Demoz and Mont.).

*T. carpini* Johans. (*Exoascus carpini* Rostrup).

*T. polyspora* Johans. (*Exoascus polysporus* Sorokin?).

*T. bacteriosperma* Johans.

*T. carnea* Johans.

*T. filicina* Rostrup.

*T. ulmi* Johans. (*Exoascus ulmi* Fkl.).

In an article in the *Annals of Botany* for November, 1887, B. L. Robinson reviews the structure and history of *Taphrina*, and compiles an annotated catalogue of the North American species, so far as known. According to this article there are eight well-known species, with several others which are less perfectly known, as follows:—

*Taphrina pruni* Tul., on the fruit of *Prunus domestica* L., forming "the so-called 'plum pockets.' " The *Taphrina* on *Prunus maritima* Wang., *P. virginiana* L., and *P. serotina* Eber., is considered to be "probably identical."

*T. deformans* Tul., causing the "peach curl" of the leaves of the peach tree. A *Taphrina*, probably the same as this, has been found several times in Massachusetts deforming the leaves and branchlets of *Prunus serotina* Eber."

*T. purpurascens* Robinson (*Ascomyces deformans* Berk. var. *purpurascens* Ellis and Everhart). On leaves of *Rhus copallina* L., causing them to become dark purple in color, wrinkled, limp, and pendent.

*T. potentillæ* Johnson, on leaves of *Potentilla canadensis* L.

*T. flava* Farlow, on leaves of *Betula alba*, var. *populifolia* Spach, and also on *Betula papyracea* Ait. "This species must be carefully distinguished from the more recent and very different *Exoascus flavus* of Sadebeck."

*T. alnitorqua* Tul., "on bracts of the fertile catkins of the alder."

*T. aurea* Fries. "The only form of this species yet found in America, attacks the fertile catkins of poplar trees (*Populus grandidentata* Michx.).

*T. cœrulescens* Tul., on the leaves of various species of oaks, producing grayish or bluish spots.—*Charles E. Bessey*.

THE TWENTIETH AND TWENTY-FIRST CENTURIES OF N. A. FUNGI.—In March of the present year these numbers were received by subscribers from the hands of the editors, J. B. Ellis and R. M. Everhart. No change has been made in the style of the work, whose uniform excellence reflects great credit on American botany.

Century XX. contains eight species of *Agaricus*, three of *Boletus*, four of *Cantharellus*, five of *Hygrophorus*, four of *Lenzites*,

two of Geaster (the new species described by Morgan in Nov. AM. NAT.), and two of Lycoperdon. The remaining species are for the most part parasitic microfungi.

Century XXI. contains nine species of *Agaricus*, six of *Clavaria*, fourteen of *Peziza*, besides single species of many genera of the larger fungi. The microfungi are also represented by many genera. At the close of the volume, Nos. 2085 to 2100 inclusive are species of *Myxomycetes*, determined by Dr. Rex and Harold Wingate. The species are (2085) *Physarum cinereum* Batsch, (2086) *P. contextum* Pers., (2087) *Tilmadoche columbina* Berk., (2088) *Stemonites morgani* Pk., (2089) *Didymium eximium* Pk., (2090) *D. fockelianum* Rfski., (2091) *D. clavus* A. and S., (2092) *Siphoptychium casparyi* Rfski., (2093) *Chondrioderma testaceum* Schrod., (2094) *Comatriche gracilis* Wingate, (2095) *Cribraria intricata* Schrod., (2096) *Tubulina cylindrica* Bull., (2097) *Trichia fragilis* Low., forma *simplex*; (2098) *T. fragilis* Low., forma *botrytis*; (2099) *T. varia* Pers., (2100) *T. scabra* Rfski.

Mr. W. C. Stevenson, Jr., of Philadelphia, has again earned the thanks of botanists by making an Index of Habitats for Centuries XI. to XX. of the North American Fungi.—*Charles E. Bessey.*

ALLEN'S CHARACEÆ OF AMERICA.<sup>1</sup>—As its title indicates, this is the first part of what it is hoped will eventually be a complete monograph of the Characeæ of America. In his introduction the author says that "the demand for information concerning these plants is so pressing that it is thought but to issue the first part of the work now, to be followed in a year or two by the second part, which will contain descriptions of the species now known to inhabit American waters."

The part before us contains (1) an Introduction, mainly devoted to collection, preservation, habitat, etc., (2) a chapter principally consisting of structural details, with a brief historical statement. In this, the term *sporophydium* is introduced for the spore-fruit or sporocarp. We prefer the term *sporocarp*, and regret that our author did not adopt it rather than the other. The term proposed possesses, of course, the advantage of being non-committal as to homologies, but to the present writer it would appear entirely safe to adopt so fitting a term as sporocarp, in place of the vague one of sporophydium (*spora* and *phudion*, diminutive of *phu*, a growth; the term thus signifies a spore growthlet, i.e., a little spore-growth). Following this is (3) a chapter entitled Classification and Synopsis.

<sup>1</sup> *The Characeæ of America*. Part I. Containing the Introduction, Morphology, and Classification. By Timothy Field Allen, M.D., LL.D., Fellow of the New York Academy of Sciences, Corresponding Member of the Buffalo Academy of Natural Sciences, of the Portland Society of Natural History, etc. With fifty-five illustrations. New York, No. 10 East Thirty-sixth street. 1888. 8vo. 64 pp.

This final chapter includes the technical characters of the families and genera represented in America, with synoptical descriptions of the species. The system adopted may be summarily shown as follows:—

### CHARACEÆ Richard.

#### Family I. NITELLÆ u. Leonhardi.

Genus 1. *Nitella* Ag., containing 79 species.

Genus 2. *Tolypella* A. Braun, with 13 species.

#### Family II. CHARÆ u. Leonhardi.

Genus 3. *Lamprothamnus* A. Braun, containing a single species, presenting three varieties.

Genus 4. *Lychnothamnus* Rupr. u. Leonhardi, with 3 species.

Genus 5. *Chara* Vaill u. Leonhardi, with 62 species, besides many varieties.

The order is thus shown to contain 158 species, of which 58 are given as North American, there being 30 species of *Nitella*, 8 of *Tolypella*, and 20 of *Chara* so recorded.—*Charles E. Bessey*.

## ZOOLOGY.

DIRECT NUCLEAR DIVISION IN EUPLOTES.—Dr. K. Mobius describes (*Stzb. Gesellsch. Naturf. Freund*, Berlin, 1887) direct nuclear division in the fission of *Euplotes harpa*. The nucleus elongates transversely, becomes thinner in the middle, and at length divides, the two halves remaining connected by but a thread at the time when the oral cilia of the second individual are formed. Killing with osmic acid and staining with saffranin showed that the chromatin was mostly arranged in thread-like rows of granules and that karyokinetic figures were never formed.

THE FOOT IN PROSOBRANCHIATE MOLLUSCS.—Mr. H. L. Osborn (*Proc. Am. Assoc. Adv. Sci.*, XXXVI.) gives in abstract the results of his researches on the morphology of the foot in the Gasteropods. In *Fasciolaria* and *Fulgur* it arises as a paired (not median) elevation of the ectoderm behind the velum and the blastopore. These later coalesce. The conclusions are that this organ must be regarded as ontogenetically, and, possibly, phylogenetically, belonging to the series of paired locomotor organs, like those of annelids and arthropods. To this view, however, the author points out certain difficulties.